Chapter 15 Preapproved Wall Appendix: Specific Requirements and Details for SSL Concrete Panel Walls

In addition to the general design requirements provided in **Appendix 15-A**, the following specific requirements apply to the design of the SSL MSE Plus™ Retaining Wall:

The design of the wall system shall be consistent with the HITEC report for this system (**HITEC, 1999, *Evaluation of the SSL MSE Plus™ Retaining Wall System*, ASCE, CERF Report No. 40441**) and **WSDOT GDM Chapter 15**. SSL uses the AASHTO Standard Specifications for Highway Bridges (**2002**) as the basis for their wall design. Interim approval is given for the continued use of the AASHTO Standard Specifications as the basis for design.

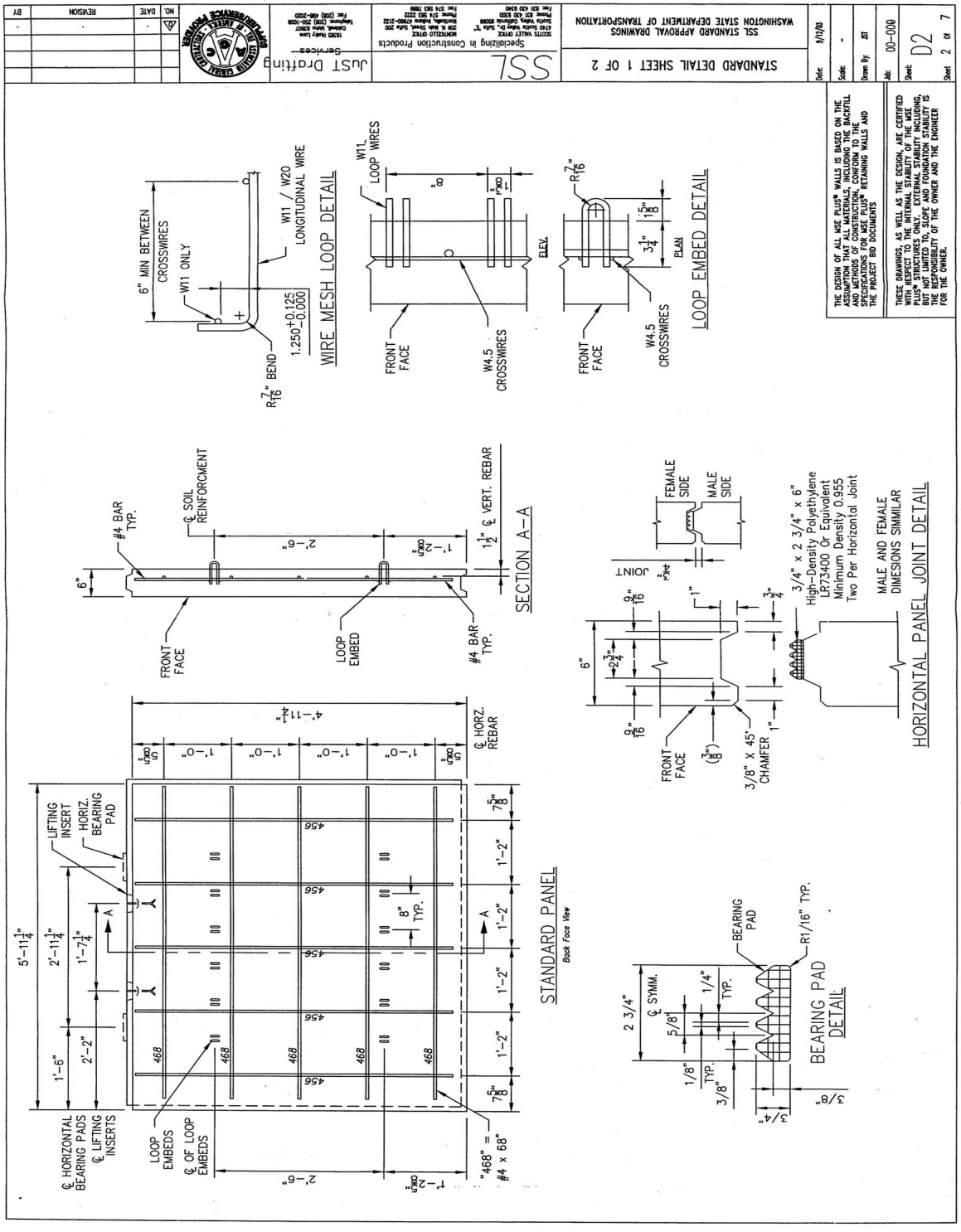
Since the HITEC report was published, the connection details between the facing panels and the soil reinforcement strips have changed. Based on tests conducted through a CALTRANS project, the new connection details meet AASHTO requirements and are therefore acceptable. Note the connector shall be designed to have adequate life considering corrosion loss. Furthermore, the connector loops embedded in the facing panels shall be lined up such that the steel grid reinforcement cross bar at the connection is uniformly loaded. Therefore, regarding the alignment of the bearing surfaces of the embedded wire loops, once the steel grid is inserted into the loops, no loop shall have a gap between the loop and the steel grid cross bar of more than 0.125 inch.

Reinforcement pullout shall be calculated based on the default values for steel grid reinforcement provided in the AASHTO Specifications. If, at some future time product and soil specific pullout data is provided to support use of non-default pullout interaction coefficients, it should be noted that LRFD pullout resistance design using these product and soil specific interaction coefficients has not been calibrated using product specific data statistics and reliability theory. Therefore, the specified resistance factors in the GDM and AASHTO LRFD Specifications should not be considered applicable to product specific pullout interaction coefficients.

Approved details for the SSL MSE Plus™ wall system are provided in the following plan sheets. Exceptions and additional requirements regarding these approved details are as follows:

- In plan sheet 3 of 7, regarding the filter fabric shown, WSDOT reserves the right to require the use WSDOT Standard Specification materials as specified in Standard Specification Section 9-33 that are similar to those specified in this plan sheet.

In plan sheet 5 of 7, there should be a minimum cover of 4 inches of soil between the steel grid and the traffic barrier reaction slab.


STANDARD DETAIL SHEET 1 OF 2
SSL STANDARD APPROVAL DRAWINGS
WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
SSL
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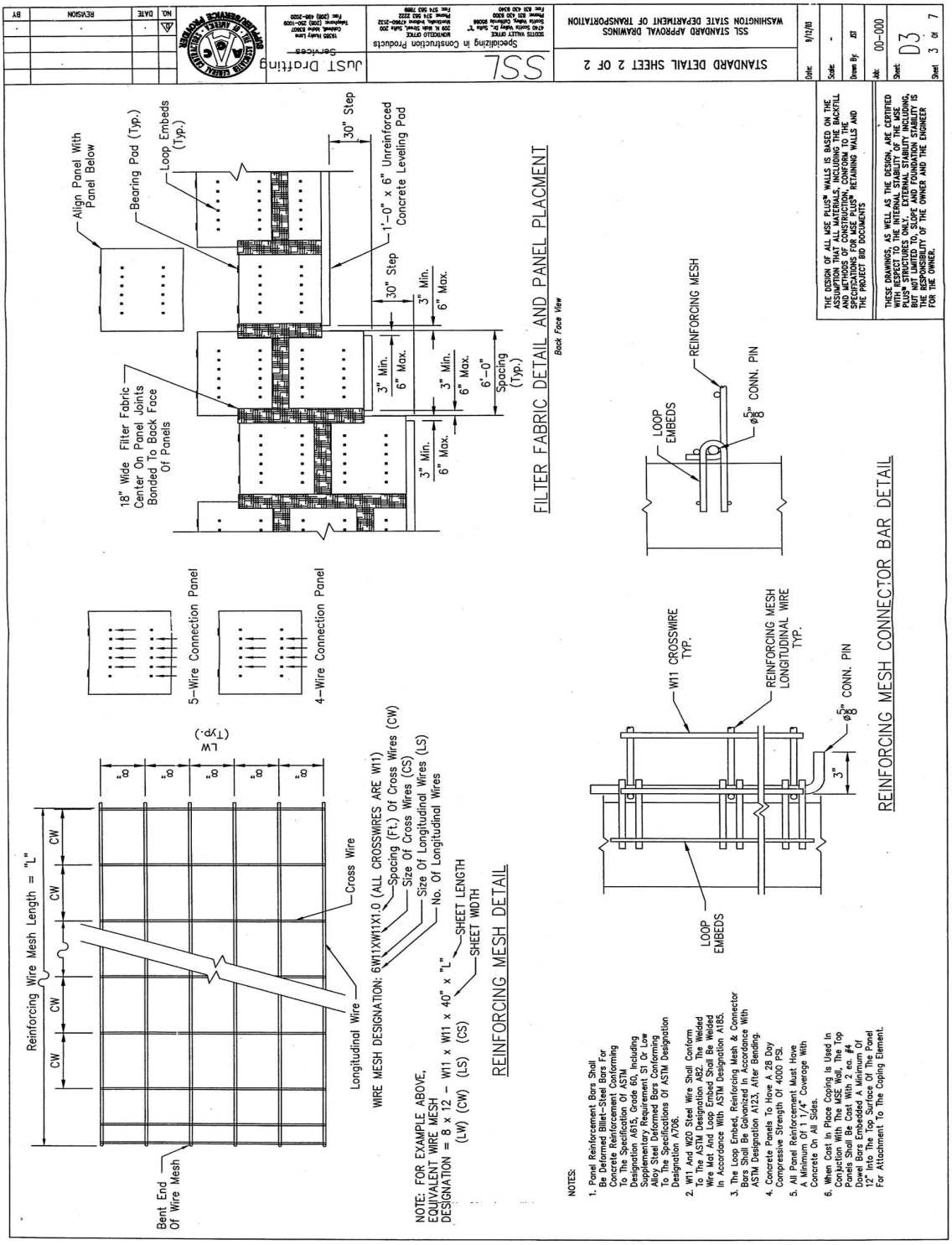
Date: 9/12/03
Scale: -
Drwn By: JST
Job: 00-000
Sheet: D2
Sheet 2 of 7
NO. DATE REVISION BY
THE DESIGN OF ALL MSE PLUS® WALLS IS BASED ON THE ASSUMPTION THAT ALL MATERIALS, INCLUDING THE BACKFILL AND FOUNDATION SOILS, CONFORM TO THE SPECIFICATIONS FOR MSE PLUS® RETAINING WALLS AND THE PROJECT BID DOCUMENTS
THESE DRAWINGS, AS WELL AS THE DESIGN, ARE CERTIFIED WITH RESPECT TO THE INTERNAL STABILITY OF THE MSE PLUS® STRUCTURES ONLY. EXTERNAL STABILITY INCLUDING, BUT NOT LIMITED TO, SLOPE AND FOUNDATION SOILS IS THE RESPONSIBILITY OF THE OWNER AND THE ENGINEER FOR THE OWNER.
WIRE MESH LOOP DETAIL
6" MIN BETWEEN CROSSWIRES
W11 ONLY
W11 / W20 LONGITUDINAL WIRE
1.250+0.125 -0.000
R 7/16" BEND
W11 LOOP WIRES
FRONT FACE
W4.5 CROSSWIRES
ELEV.
PLAN
LOOP EMBED DETAIL
SECTION A-A
℄ SOIL REINFORCMENT
#4 BAR TYP.
℄ VERT. REBAR
LOOP EMBED
STANDARD PANEL
Back Face View
℄ HORZ. REBAR
LIFTING INSERT
HORIZ. BEARING PAD
℄ HORIZONTAL BEARING PADS
℄ LIFTING INSERTS
℄ OF LOOP EMBEDS
"468" = #4 x 68"
FEMALE SIDE
MALE SIDE
JOINT
3/4" x 2 3/4" x 6" High-Density Polyethylene LR73400 Or Equivalent Minimum Density 0.955 Two Per Horizontal Joint
MALE AND FEMALE DIMESIONS SIMMILAR
HORIZONTAL PANEL JOINT DETAIL
3/8" X 45° CHAMFER
BEARING PAD DETAIL
BEARING PAD
R1/16" TYP.
℄ SYMM.
1/4" TYP.
1/8" TYP.


STANDARD DETAIL SHEET 2 OF 2
SSL STANDARD APPROVAL DRAWINGS
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Sheet 3 of 7
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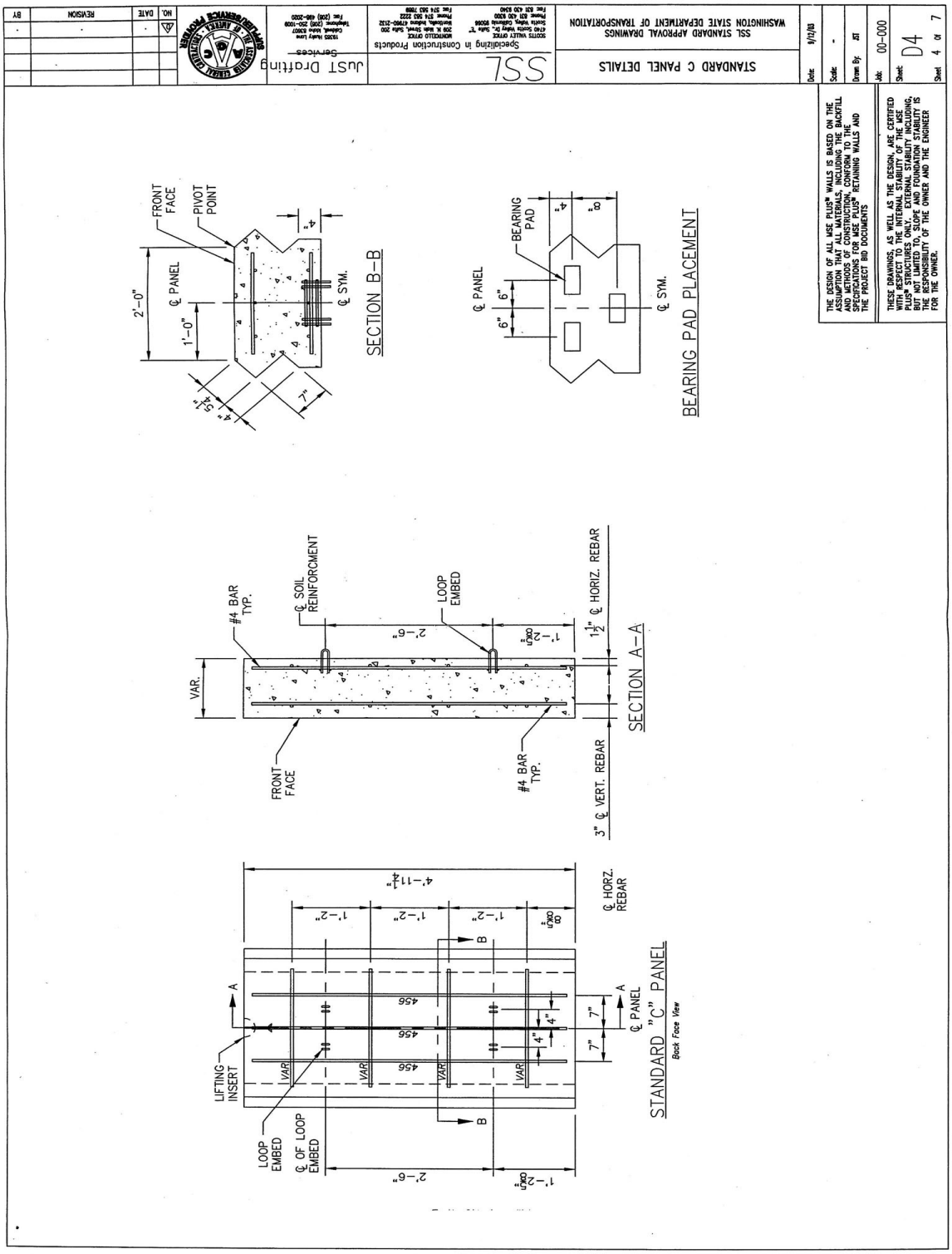
FILTER FABRIC DETAIL AND PANEL PLACMENT
Back Face View
Align Panel With Panel Below
Bearing Pad (Typ.)
Loop Embeds (Typ.)
30" Step
1'-0" x 6" Unreinforced Concrete Leveling Pad
18" Wide Filter Fabric Center On Panel Joints Bonded To Back Face Of Panels
3" Min.
6" Max.
6'-0" Spacing (Typ.)
5-Wire Connection Panel
4-Wire Connection Panel
REINFORCING MESH DETAIL
Reinforcing Wire Mesh Length = "L"
CW
LW (Typ.)
Cross Wire
Longitudinal Wire
Bent End Of Wire Mesh
WIRE MESH DESIGNATION: 6W11XW11X1.0 (ALL CROSSWIRES ARE W11)
Spacing (Ft.) Of Cross Wires (CW)
Size Of Cross Wires (CS)
Size Of Longitudinal Wires (LS)
No. Of Longitudinal Wires
SHEET LENGTH
SHEET WIDTH
NOTE: FOR EXAMPLE ABOVE, EQUIVALENT WIRE MESH DESIGNATION = 8 x 12 - W11 x W11 x 40" x "L"
(LW) (CW) (LS) (CS)
REINFORCING MESH CONNECTOR BAR DETAIL
REINFORCING MESH
LOOP EMBEDS
CONN. PIN
5/8"ø
W11 CROSSWIRE TYP.
REINFORCING MESH LONGITUDINAL WIRE TYP.
3"
NOTES:
1. Panel Reinforcement Bars Shall Be Deformed Billet-Steel Bars For Concrete Reinforcement Conforming To The Specification Of ASTM Designation A615, Grade 60, Including Supplementary Requirement S1 Or Low Alloy Steel Deformed Bars Conforming To The Specifications Of ASTM Designation A706.
2. W11 And W20 Steel Wire Shall Conform To The ASTM Designation A82. The Welded Wire Mat And Loop Embed Shall Be Welded In Accordance With ASTM Designation A185.
3. The Loop Embed, Reinforcing Mesh & Connector Bars Shall Be Galvanized In Accordance With ASTM Designation A123, After Bending.
4. Concrete Panels To Have A 28 Day Compressive Strength Of 4000 PSI.
5. All Panel Reinforcement Must Have A Minimum Of 1 1/4" Coverage With Concrete On All Sides.
6. When Cast In Place Coping Is Used In Conjuction With The MSE Wall, The Top Panels Shall Be Cast With 2 ea. #4 Dowel Bars Embedded A Minimum Of 12" Into The Top Surface Of The Panel For Attachment To The Coping Element.


STANDARD C PANEL DETAILS
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Sheet 4 of 7
THE DESIGN OF ALL MSE PLUS® WALLS IS BASED ON THE ASSUMPTION THAT ALL MATERIALS, INCLUDING THE BACKFILL AND FOUNDATION SOILS, CONFORM TO THE SPECIFICATIONS FOR MSE PLUS® RETAINING WALLS AND THE PROJECT BID DOCUMENTS
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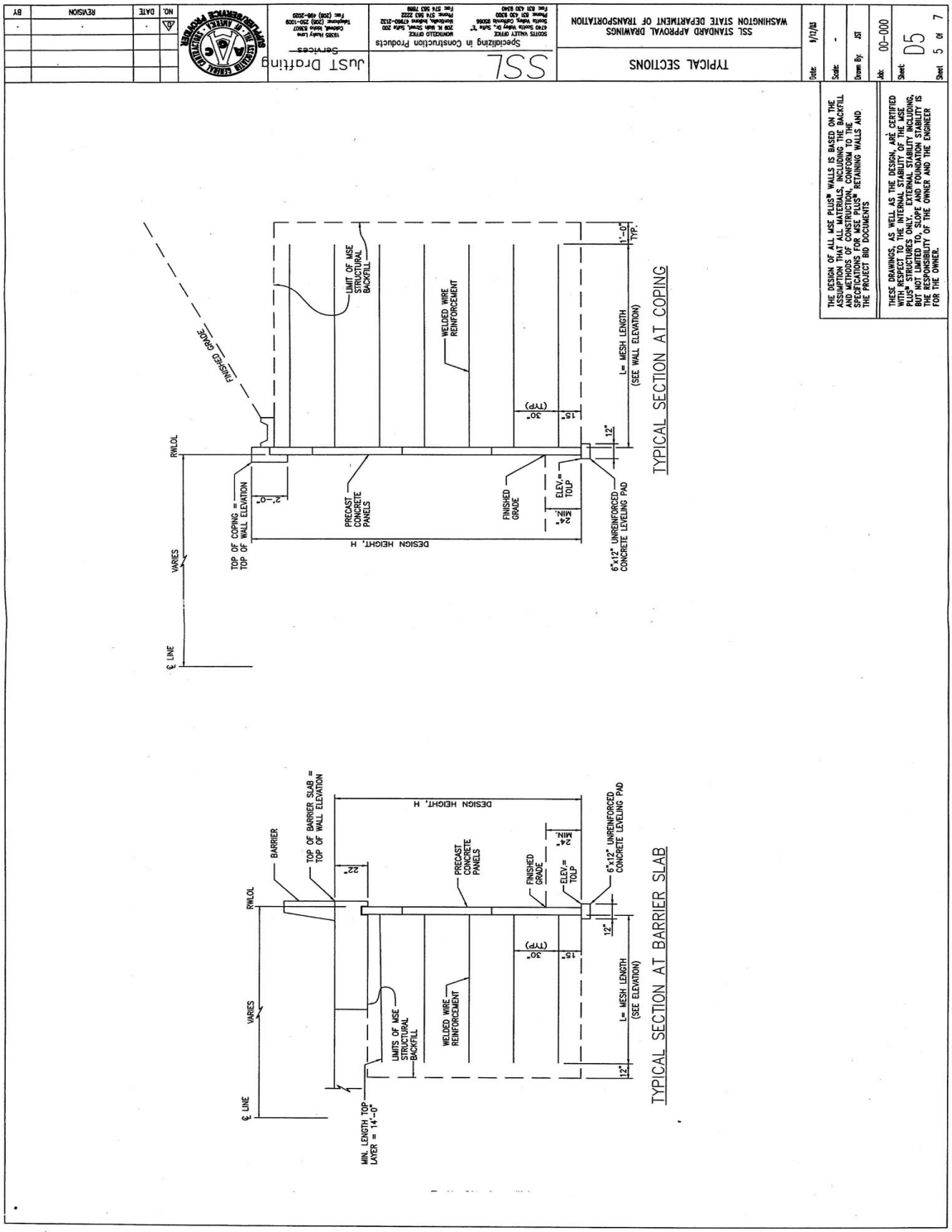
FRONT FACE
PIVOT POINT
℄ PANEL
℄ SYM.
2'-0"
1'-0"
4"
SECTION B-B
BEARING PAD
BEARING PAD PLACEMENT
#4 BAR TYP.
℄ SOIL REINFORCMENT
LOOP EMBED
1½" ℄ HORIZ. REBAR
3" ℄ VERT. REBAR
SECTION A-A
℄ HORZ. REBAR
℄ PANEL
LIFTING INSERT
℄ OF LOOP EMBED
STANDARD "C" PANEL
Back Face View


TYPICAL SECTIONS
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Sheet 5 of 7
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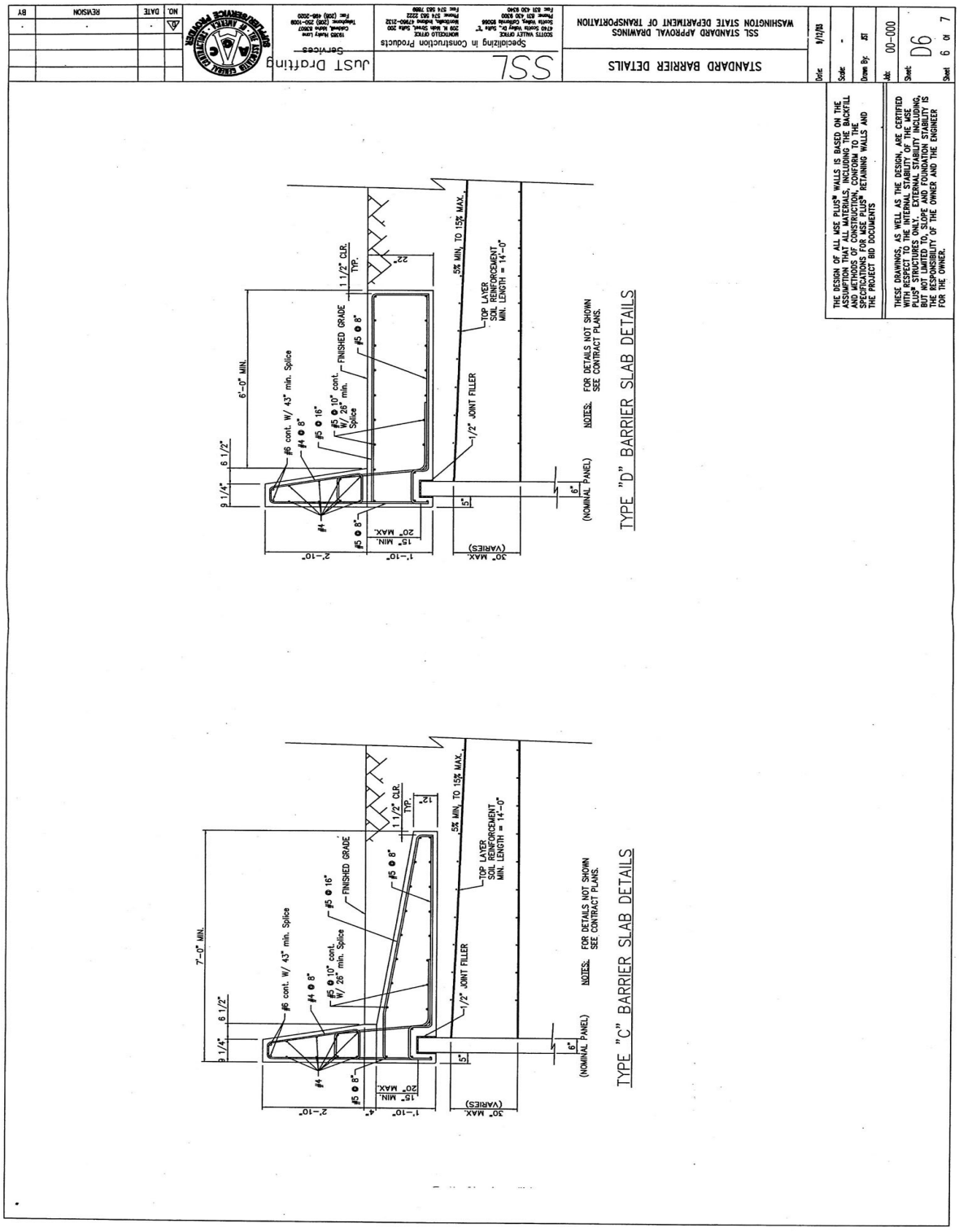
TYPICAL SECTION AT COPING
TYPICAL SECTION AT BARRIER SLAB
FINISHED GRADE
UNIT OF MSE STRUCTURAL BACKFILL
WELDED WIRE REINFORCEMENT
L= MESH LENGTH (SEE WALL ELEVATION)
TYP.
1'-0"
30° (TYP)
15"
12"
RWLOL
TOP OF COPING = TOP OF WALL ELEVATION
2'-0"
PRECAST CONCRETE PANELS
FINISHED GRADE
ELEV.= TOLP
MIN. 24"
6"x12" UNREINFORCED CONCRETE LEVELING PAD
DESIGN HEIGHT, H
VARIES
℄ LINE
BARRIER
TOP OF BARRIER SLAB = TOP OF WALL ELEVATION
2'-2"
LIMITS OF MSE STRUCTURAL BACKFILL
MIN. LENGTH TOP LAYER = 14'-0"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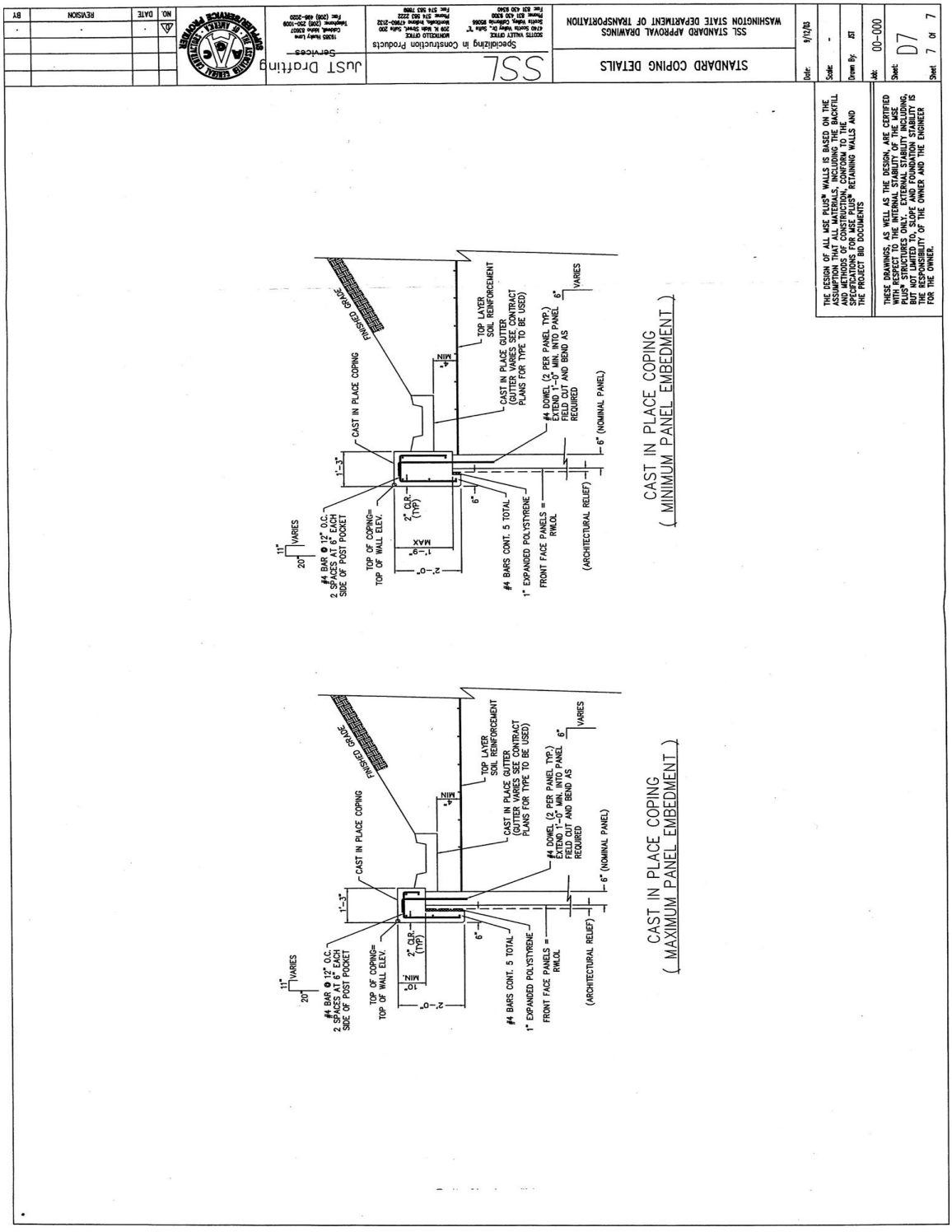
TYPE "D" BARRIER SLAB DETAILS
TYPE "C" BARRIER SLAB DETAILS
6'-0" MIN.
7'-0" MIN.
#6 cont. W/ 43" min. Splice
#4 @ 8"
#5 @ 10" cont. W/ 26" min. Splice
#5 @ 16"
FINISHED GRADE
#5 @ 8"
1 1/2" CLR. TYP.
2"
5% MIN. TO 15% MAX.
TOP LAYER SOIL REINFORCEMENT MIN. LENGTH = 14'-0"
1/2" JOINT FILLER
6" (NOMINAL PANEL)
5"
9 1/4"
6 1/2"
#4
#5 @ 8"
15" MIN.
20" MAX.
2'-10"
1'-10"
4"
30" MAX. (VARIES)
NOTES: FOR DETAILS NOT SHOWN SEE CONTRACT PLANS.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Sheet 7 of 7
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NO. DATE REVISION BY
FINISHED GRADE
CAST IN PLACE COPING
TOP LAYER SOIL REINFORCEMENT
CAST IN PLACE GUTTER (GUTTER VARIES SEE CONTRACT PLANS FOR TYPE TO BE USED)
#4 DOWEL (2 PER PANEL TYP.) EXTEND 1'-0" MIN. INTO PANEL FIELD CUT AND BEND AS REQUIRED
6" (NOMINAL PANEL)
VARIES
1'-3"
#4 BAR @ 12" O.C. 2 SPACES AT 6" EACH SIDE OF POST POCKET
TOP OF COPING= TOP OF WALL ELEV.
2" CLR. (TYP)
#4 BARS CONT. 5 TOTAL
1" EXPANDED POLYSTYRENE
FRONT FACE PANELS = RWLOL
(ARCHITECTURAL RELIEF)
CAST IN PLACE COPING
(MINIMUM PANEL EMBEDMENT)
CAST IN PLACE COPING
(MAXIMUM PANEL EMBEDMENT)